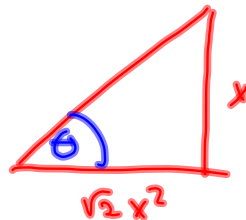


$$z = \sqrt{x^2 + x^2} = \sqrt{2x^2}$$
$$= \sqrt{2}x$$

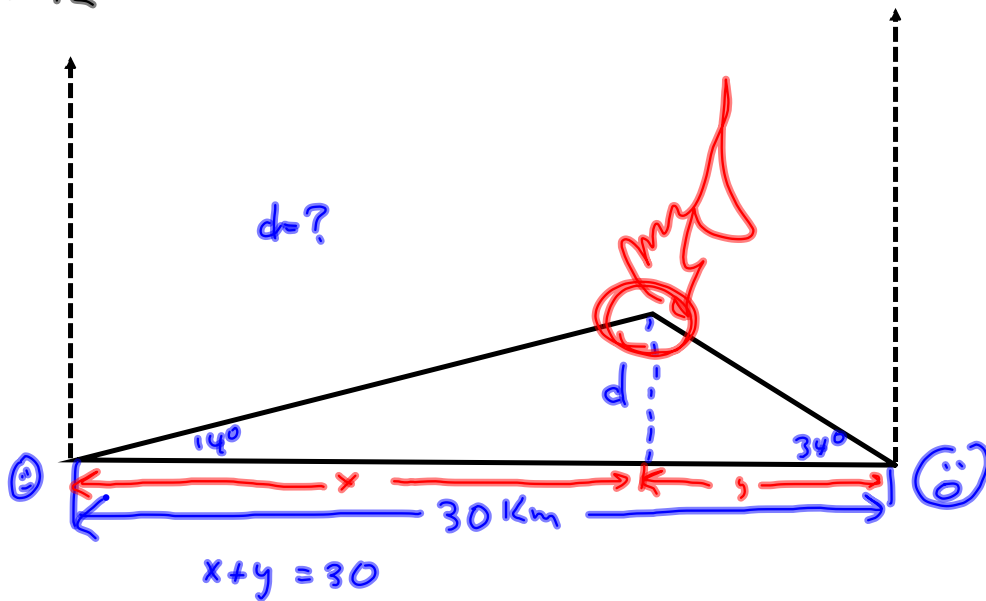
$$\tan \theta = \frac{1}{\sqrt{2}}$$

$$\arctan\left(\frac{1}{\sqrt{2}}\right) = \theta$$

$$\approx 35.26^\circ$$



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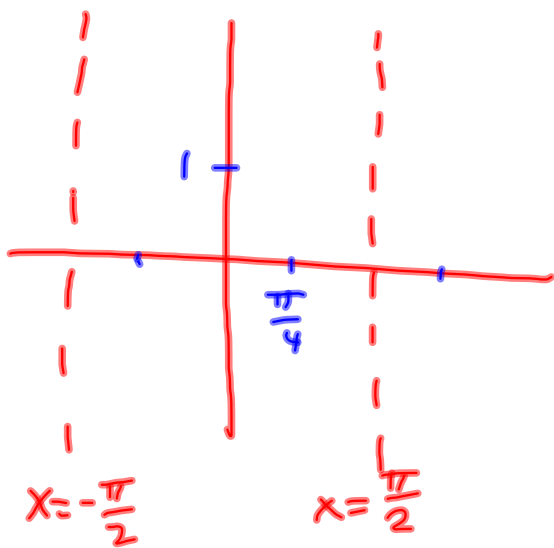
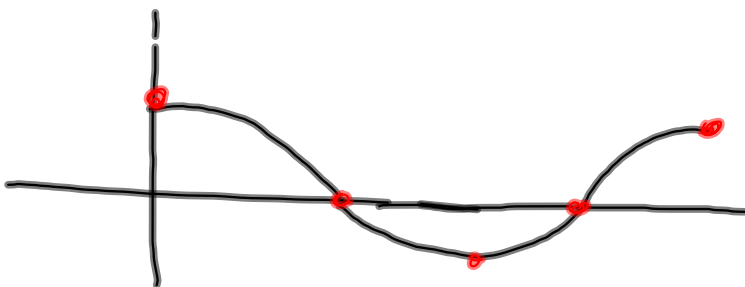
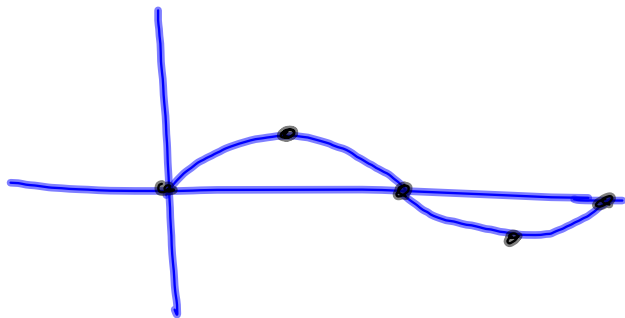


$$x + y = 30$$

$$\frac{x}{d} = \cot 14^\circ \quad \frac{y}{d} = \cot 34^\circ$$

$$\frac{x}{d} + \frac{y}{d} = \frac{x+y}{d} = \frac{30}{d} = \cot 14^\circ + \cot 34^\circ$$

$$d = \frac{30}{\cot 14^\circ + \cot 34^\circ}$$



The restriction of the domain is because we need $f(x)$ to be 1-to-1 in order for $f^{-1}(x)$ to be a function.



$$y = 18 \cos\left(\frac{\pi}{24}(x-12)\right) - 6$$

$$bx = \pi$$

$$T = 48$$

$$bx = 2\pi \text{ when } x = 48$$

$$48b = 2\pi$$

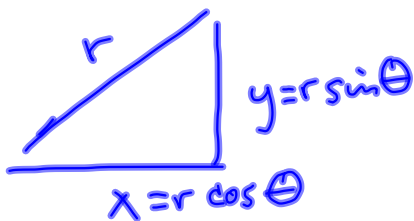
$$b = \frac{2\pi}{48} = \frac{\pi}{24}$$

arc length $s = r\theta$

area of a sector $A = \frac{1}{2}r^2\theta$

$$\pi r^2 = \frac{1}{2}(2\pi)r^2$$

Radians were invented for this
super-clean relationship between
angles & arc length and
.. .. area



$$a^2 + b^2 = c^2$$

$$x^2 + y^2 = r^2$$

$$r^2 \sin^2 \theta + r^2 \cos^2 \theta = r^2$$

$$\sin^2 \theta + \cos^2 \theta = 1$$

